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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------------|------------------------|
| 10/722,769 | 11/26/2003 | Robert A. Bellman | SP02-260 | 7200 |
| 22928 7590 04/26/2007 CORNING INCORPORATED SP-TI-3-1 CORNING, NY 14831 | | | EXAMINER CHEN, KIN CHAN | |
| | | | ART UNIT 1765 | PAPER NUMBER |
| SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS | | | MAIL DATE 04/26/2007 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/722,769

Applicant(s)

BELLMAN ET AL.

Examiner

Kin-Chan Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 7, 13 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-12, 14-24 and 26-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 9, 2007 has been entered.

Claim Rejections - 35 USC § 112

2. Claims 1-6, 8-12, 14-24, and 26-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 31, newly amended "consists essentially of" is new matter, which is not supported in the specification. Applicant has pointed out [0027] on page 8 of the specification, however, the examiner does not find any support for "consists essentially of".

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Any negative limitation or **exclusionary provision** must have basis in the original disclosure. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph as failing to comply with the written description requirement. *Ex parte Parks*, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993). The mere absence of a positive recitation is not basis for an exclusion. Specification must clearly set forth an explicit definition. *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d985, 989 (Fed.Cir. 1999).

"A consisting essentially of' claim occupies a middle ground between closed claims that are written in a consisting of' format and fully open claims that are drafted in a comprising' format." *PPG Industries v. Guardian Industries*, 156 F.3d 1351, 1354, 48 USPQ2d 1351, 1353-54 (Fed. Cir. 1998). When an applicant contends **that additional steps or materials are excluded by the recitation of "consisting essentially of,"** applicant has the burden of showing the support in the specification.

For search and examination purposes, absent a clear indication in the specification, **"consisting essentially of" will be construed as equivalent to "comprising."** See, e.g., *PPG*, 156 F.3d at 1355, 48 USPQ at 1355.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

As has been stated above, for search and examination purposes, absent a clear indication in the specification, "consisting essentially of" will be construed as equivalent to "comprising."

5. Claims 1-3 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yano et al. (US 6,740,590; hereinafter "Yano").

In a method for chemical mechanical polishing, Yano teaches a slurry may **comprise** non-agglomerated multi-component particles of inorganic particles (**col. 7, lines 7-12**; so-called a mixed oxide in the instant claim) composition having an isoelectric point greater than the pH of dispersed particles in solution. Yano teaches that

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the polymer particles may be used to form aggregates with inorganic particles (Figs. 2 and Fig.8) and produce uniformed **dispersed composite particles** (abstract), therefore, produce the dispersed (so-called non-agglomerated in the instant claim) particles of inorganic particles (so-called a mixed oxide in the instant claims), **as clearly shown in Fig. 2**. Yano teaches that a surface of the workpiece may be abraded with the multi-component particles. Since the same inorganic particles (so-called a mixed oxide in the instant claim) used for the same CMP process, each particle exhibits a modified surface chemistry performance inherently. It is expected that the particle surface chemistry is modified (the isoelectric point of the multi-component particle is displaced toward an alkaline pH value) relative to the surface chemistry performance of the individual, original base constituents of the particle. See abstract; cols. 7 and 8.

6. Claims 4-6, 8-12, 14-24, and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (US 6,740,590; hereinafter "Yano").

In a method for chemical mechanical polishing, Yano teaches a slurry may **comprise** non-agglomerated multi-component particles of inorganic particles (**col. 7, lines 7-12**; so-called a mixed oxide in the instant claim) composition having an isoelectric point greater than the pH of dispersed particles in solution. Yano teaches that the polymer particles may be used to form aggregates with inorganic particles (**Figs. 2 and Fig.8**) and produce uniformed **dispersed composite particles** (abstract), therefore, produce the dispersed (so-called non-agglomerated in the instant claim) particles of inorganic particles, **as clearly shown in Fig. 2**. Yano teaches that a surface

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of the workpiece may be abraded with the multi-component particles. Yano teaches that pH value may be adjusted depending on the particle type (col. 8, lines 5-10). Since the same inorganic particles (so-called a mixed oxide in the instant claim) used for the same CMP process, it is expected that each particle exhibits a modified surface chemistry performance. It is further expected that the particle surface chemistry is modified (such as the isoelectric point of the multi-component particle is displaced toward an alkaline pH value) relative to the surface chemistry performance of the individual, original base constituents of the particle. See abstract; cols. 7 and 8.

The limitations of claims 4-6, 8-12, 14, 21, and 31 have been addressed above and rejected for the same reasons, *supra*.

When the examiner has reason to believe that functional language asserted to be critical for establishing novelty in claimed subject matter may, in fact be an inherent characteristic of the prior art as discussed above, the burden of proof is shifted to the applicant to prove that the subject matter shown in the prior art does not possess the characteristics relied upon. In re Fitzgerald et al. 205 USPQ 594. Whether the rejection is based on "inherency" under 35 U.S.C. §102, or on "prima facie obviousness" under 35 U.S.C. §103, jointly or alternatively.

In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980). Ex parte Bylund 217 USPQ 492 (PO BdPatApp 1981); In re Hallman 210 USPQ 609 (CCPA 1981). See also In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977).

As to claims 16-20, Yano teaches the ranges of inorganic particles (so-called a mixed oxide) sizes, see col. 9, lines 6-9.

Dependent claims 15 and 26-30 differ from Yano by specifying pre-selected surface chemistry and hardness tailored to the workpiece surface; non-planarized surface, metallized interconnection structure, interlevel dielectric structure. However, they are merely a matter of choices of design depending on product requirement. Hence, it would have been obvious to one with ordinary skill in the art to use different

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choices of design in order to make various semiconductor devices as required and produce an expected result.

Dependent claims 22-24 differ from Yano by specifying conventional methods of forming particles or slurry in the art of semiconductor device fabrication. A person having ordinary skill in the art would have found it obvious to modify Yano by adding any of same conventional method to same in order to provide their art recognized advantages and produce an expected result.

The examiner takes official notice of facts that applicant did not traverse the aforementioned conventionality (e.g., well-known features, common knowledge, obviousness), which have been stated in the previous office action (March 3, 2005).

Response to Arguments

7. Applicant's arguments filed March 9, 2007 have been fully considered but they are not persuasive.

Applicant has argued that Yano does not teach that each of the multi-component particles consists essentially of a least of a mixed-oxide, an oxyfluoride, and an oxynitride composition. It is not persuasive. As has been stated in the office action, When an applicant contends **that additional steps or materials are excluded by the recitation of "consisting essentially of,"** applicant has the burden of showing the support in the specification. Applicant has pointed out [0027] on page 8 of the

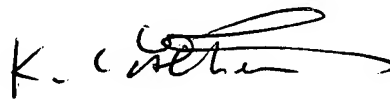
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specification. However, the examiner does not find any support for "consists essentially of".

For search and examination purposes, absent a clear indication in the specification, **"consisting essentially of" will be construed as equivalent to "comprising."**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 19, 2007



Kin-Chan Chen
Primary Examiner
Art Unit 1765